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EXAMINER	
WOODS, ERIC V	
ART UNIT	**PAPER NUMBER**
2628	

DATE MAILED: 08/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/764,787	STAMM ET AL.	
	Examiner	Art Unit	
	Eric Woods	2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 March 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/29/2006 has been entered.

Response to Arguments

Applicant's arguments, see Remarks pages 1-7 and claim amendments, filed 29 March 2006, with respect to the rejection(s) of claim(s) 1-23 under various grounds have been fully considered and are persuasive.

The objections to claims 18-19, 1-20, and 22 on separate grounds for each stand withdrawn because applicant has rebutted the case put forward for the reasons for the objections (page 2, Remarks) or has amended the claims to correct the cited deficiencies.

Therefore, the rejection of claims 12-19 under 35 USC 101 has been withdrawn in view of applicant's amendment.

The rejections of claims 21-23 under 35 USC 112, first paragraph, for lack of written description, and 35 USC 112, as indefinite, stand withdrawn on the grounds that applicant has amended the claims (112 2^{nd} rejection against claim 21), has shown

where support for the claimed subject matter exists (pages 2-3), and shown where the specification defines the questioned terms (second paragraph, page 3 of the Remarks).

The rejections of claims 1-23 under 35 USC 103(a) stand withdrawn in view of applicant's amendments to the independent claims.

However, upon further consideration, a new ground(s) of rejection is made in view of various references as below.

Firstly, examiner would like to point out the language in applicant's specification concerning the support for the amended claims.

Examiner turns to the applicant's specification, paragraphs [0058-0060], applicant's Remarks submitted 3/29/2006 (page 3 in the IFW record), and Figure 6, where first applicant states that Examiner has not shown the element of determining that the control points are on the common edge of a simplified outline including when the control points when are off of the outline of the graphical object. Applicant then points to Figure 6. The term "straight line segments" as used in the context of the claim – and "common edge" – refer to straight line segments composed of **control points**, where these are applied to the simplified version of the object. That is, applicant has shown that claims **are not** aimed at generating simplified graphical objects per se (in the sense that control points on the object outline itself are removed). Rather, applicant is simplifying the geometry of the **control points themselves**. See Figure 6, as illustrated below.

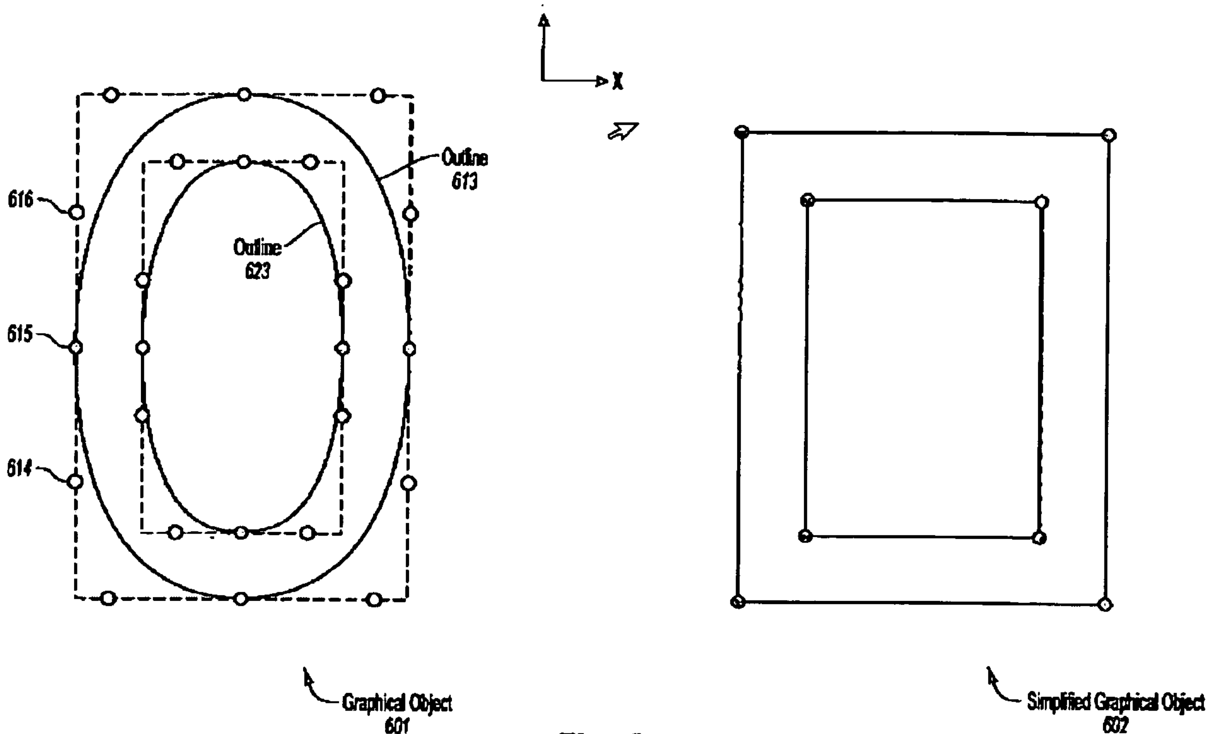

Fig. 6

The outline of the graphic object is **not** changed. Rather, the graphical object refers to the geometry of the control points themselves. The claims, as previously written, did not adequately reflect or illustrate this difference. It is further noted that the drawings are defective, as noted below, and that element 602 proves nothing, as it is only represents two rectangles, which examiner does not feel are an adequate representation – they do not show the outline, nor how the newly generated control points are related to it.

Drawings

The drawings are objected to under 37 CFR 1.83(a) because they fail to show that there are any control points are common between simplified graphical object 601 and 602 as described in the specification, paragraphs [0057-0060]. Specifically, there

are supposed to be common control points that are both on and off the outline. However **Figure 6** does **NOT** show any such outlines, and the only control points are at the corners of each rectangle, so there are absolutely **no common control points**. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the

> art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 12 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for handling consecutive control points, does not reasonably provide enablement for non-consecutive control points. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 12, and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Specifically, these claims recite the following language: "that are at least one of interspersed between or at the local extremum". This language is indefinite – note firstly *DirecTV vs. SuperGuide*, where the "at least one of A and B" was held to require at least one of A and one of B. Secondly, in this case, control points are either interspersed between various extrema or they are **at** the various extrema. They cannot be both simultaneously. The claim, as written, would suggest that such points **could** be both simultaneously. As noted below, since multiple control points are stated, it would be perfectly clear that each point is either A or B, but that "at least one of" construction renders the claim indefinite. The language would be acceptable if the "at least one of" was removed. After all, as noted above, a control point cannot exist simultaneously

between and in a region. One of the first principles of logic is the principle of contradiction; simply put, something cannot be both X and not X at the same time. In this case, the reading of that language would be inherently contradictory. Therefore, if the language were changed to "that are interspersed between or at the local extrema" it would be acceptable. Examiner finally takes the position that

Further, as applicant so helpfully pointed out on pages 1-2 of the Remarks, the word extremum is singular. It is not possible for something to be interspersed **between** only one point or region. That inherently and intrinsically requires that there be two points or regions such that there can be some area located between them. Therefore, the claim is indefinite because it does not make sense from a plurality perspective because of that phrase.

Claims 1, 12, and 20 are rejected because of the following problems: in the last clause, the recitation "that represents an outline ... of a simplified graphical object **of the graphical object**. This is redundant language and it is unclear what which graphical object is being utilized as the referent of that particular clause. Applicant may be attempting to state that there is a simplified **version** of the graphical object, and examiner will interpret the claim in that matter for purposes of prior art rejections.

Claim 12 is rejected because in the first clause after the preamble, the recitation "and control point off..." is present. It is unclear, based on the preamble, whether or not the control point is associated with a local extremum. Also, it is unclear whether or not there are consecutive control points, an issue made particularly relevant by the newly added matter. There are multiple "control points" therein. The real issues stems from

the fact that the clause reads *inter alia*, "identifying ... control point ..." This is a singular noun – it needs to be preceded by an article adjective 'a' or 'an', or the plural form of the noun needs to be recited. A rejection under 35 USC 112, second paragraph, is appropriate because of the ambiguity it creates, especially in light of the newly added material.

Examiner points out that applicant's specification would support the interpretation that control points are consecutive, particularly in the discussion concerning control points 614, 615, and 616 in Figure 6 in paragraphs [0047—0050]. Those control points **are** consecutive, which would lend credence to examiner's contention that the control points should be consecutive. However, additionally, the manner in which the first clause is written is such that the gerund has two objects, with the 'consecutive' adjective not being applicable to the 'control point'. Therefore, it is questionable whether the claim, as written, has sufficient support in the written description. That only serves to increase the ambiguity of the claim as written.

Claim 12 is rejected because the term "consecutive local extremum" is used in the first clause. As applicant as so kindly pointed out, 'extremum' is the **singular** form of the term. 'Consecutive' inherently and intrinsically requires two or more 'extremum' (e.g. consecutive extrema), since the term is defined: "Following one after another without interruption; marked by logical sequence". Both definitions would support the argument that there is a plurality issue with that claim that further renders it indefinite.

Claims 2-10, 12-19, and 21-23 are rejected as not correcting the deficiencies of their parent claim(s).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-3, 7-8, 10-11, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al (US PGPub 2005/0089237 A1).

As to claims 1 and 20 (computer-implemented method and computer program product),

In a computing system that has access to a set of control points defining an outline of a graphical object, a method for simplifying the control data that represents the outline of the graphical object, the method comprising: (Park Figure 2 illustrates the outline of a graphical object that has control points, see also Figure 3, where in [0015] it is stated that the hand-drawn object is converted to a series of strokes and that each of these strokes is then approximated by a Bezier curve, which comprises Bezier control points.

Further, [0015] states that these Bezier curves are then examined and simplified (e.g. where possible, the curves are replaced by straight lines, and/or further simplified in a manner where the control points are modified).

-Identifying a plurality of local extrema on the outline of the graphical object; (Sander 2:20-57, where clearly the process identifies local extrema)(Piper clearly teaches that local extrema – e.g. corners – are identified (1:30-47) so that straight line segments are identified)

-Identifying a plurality of sets of local extrema, each local extremum in a set of local extrema being on a common edge of the outline of the graphical object, each set of local extrema including one or more local extremum from the plurality of identified local extrema; (Sander 2:20-57, where clearly these extrema are identified, and a path with local extrema is shown in Fig. 4 (see 4:10-15), see also 5:30-45. In 5:45-6:30, particularly 6:10-30, the groups of extrema are divided by the process into smaller sets (e.g. a curve segment with local extrema is subdivided into multiple segments and this sort of thing, where clearly a curve segment constitutes a 'common edge of the outline of a graphic object,' since the object is defined by an outline, as in Fig. 4.) Further, these clear constitute a plurality of sets – e.g. the curve segments that make up the object are a plurality of objects, and these objects clearly have local extrema, and they are segmented accordingly, which clearly creates the recited plurality of sets of local extrema, since each set is subdivided after finding local extrema, which prima facie means that the parent sets must have contained a plurality of local extrema. Further, in Figure 7 and 7:40-57, it is clearly taught that a plurality of local extrema can exist within

one segment and very clearly only one extrema is selected as representative since the multiple extrema fall within the user-defined tolerance band)(Also, Sander 6:38-52 clearly teaches that the number of points within a line segment is a design choice, which clearly means that multiple extrema can be included per set)

-Determining that control points interspersed between and/or at the local extremum of each set of local extrema are on a common edge of a simplified outline including when the control points are off of the outline of the graphical object; and (Piper clearly teaches the identification of control points on straight-line segments – see Figure 2, where the shown affine spline has two control points 15 and 16 that lie on the spline between end points 13 and 14 that are clearly extraneous and could be eliminated –see 2:25-40.)(Park clearly utilizes screening to eliminate unnecessary control points. Specifically [0021] determines that control points are on common edges of a graphical object, where they are determined to be within a specified tolerance, and it is determined whether or not they are within a certain tolerance (e.g. 'local extremum'))

-Generating simplified control data that represents an outline of the common edges of a simplified graphical object of the graphical object, the simplified control data defining a common edge including straight line segments defined by and through the control points that are at least one of interspersed between or at the local extremum including when the control points are off of the outline of the graphical object. (Piper Figure 9 teaches that segments are evaluated and that where straight-line segments exist – e.g. the degenerated curves in Figure 6 for example – the intermediate control points are removed – see step 53, while for non-degenerated curved segments the intermediate

control points are retained – step 52. As an example, see 2:40-60, where Figure 3 is discussed, where certain of the curved line segments have degenerated into straight line segments and as such, the intermediate control points are suitable to be removed. Clearly, this represents 'simplified control data' since the unnecessary curves are removed – see Abstract and 1:30-48.)(Sander Figure 7 clearly shows that multiple extrema can be within a tolerance band such that one is chosen as representative and the others are eliminated as extraneous – see 4:15-20 and 7:40-57)(Park clearly shows that [0021] that Bezier curve control points have off-line control points and the straight lines use those control points. Specifically, Park follows the logic set forth in Sander, except that it is applied to control points. Therefore, said graphical object contains straight line segments that pass through said control points that are defined at least partially by control points. Next, as noted above, such points are tested for curvature (Figure 6, [0019-0020]) **and** off-line control points are tested against an error tolerance factor (Figure 8, [0021-0022]) simplified by either (Figure 7) removing the control point entirely by converting the Bezier curve to a straight line – or the control points are adjusted [0015].)

Reference Sander teaches some of the limitations of the instant claim as set forth above, with the exception of certain details concerning how redundant control points are removed, which Piper teaches, and that such straight line segments can be defined by both on-line and off-line control points. The references are obviously analogous art since they are both directed to removing redundant control points from graphical objects as set forth in the instant claim. It would have been obvious to one of ordinary skill in

the art at the time the invention was made to combine Sander with Piper since Piper creates a file format with the reduced number of control points and splines, which clearly takes less memory than the standard files, which would obviously be an improvement of Sander (See Piper abstract, 1:30-45 for example).

Reference Park clearly teaches that straight lines on common edges can be defined through off-line control points. Further, Park clearly teaches how the connections between control points are evaluated and it is determined whether or not the control points on Bezier curves can be converted to straight lines, as discussed above. Therefore, the teaching is that Sander teaches and uses Bezier curves (4:34-55, 6:57-7:40) but approximates as intermediate line segments (the number of which is specified by the user), and certain tolerance bands. Therefore, the techniques of Park complement these by determining that such curves can be converted to straight lines and the like, and that Bezier curves can be completely removed and converted to straight lines, which is clearly the teaching that applicant insisted was not present (e.g. bottom of Remarks page 5). It would have been obvious at the time the invention was made to combine Park with Sander/Piper so that less memory would be held by Bezier curves that were converted to straight line segments, in addition to redundant control points on straight lines that are removed (which examiner will point is the process done in applicant's Figure 6).

As to claim 2,

The method as recited in claim 1, wherein identifying a plurality of local extrema on the outline of the graphical object comprises determining that the outline increases or

decreases in the same direction at points adjacent to a point that is a prospective local extremum.

The Sander reference teaches this limitation in 2:10-40, where a local extrema is clearly defined to be a point in a curve with vertical or horizontal slope having portions of the path before and after the point positioned on the same side of a line tangent to the point. Clearly, this meets the recited definition, and it would have been obvious to find local extrema this way, because an extrema is by nature indicated by a change in direction of a curve as specified above. Since only the primary reference is utilized, motivation and combination is incorporated from the rejection to the parent claim.

As to claim 3,

The method as recited in claim 1, wherein identifying a plurality of local extrema on the outline of the graphical object comprises identifying a plurality of local extrema on the outline of a typographical character.

In Sander 1:40-45, a piece of software is listed as being able to generate paths. That piece of software is Aldus® Fontographer, which is well known to one of ordinary skill in the art to be software that allows a user to create fonts, which clearly consist of typographical characters, and the outline of such a character is essentially what a TrueType™ font or an Adobe Postscript Type 1 font consists of – that is, control points that define splines for the outline and fill of such a character. Piper clearly teaches in 1:10-25 the example of the letter "A" for reduction in the number of control points required, which is clearly an outline of a typographical character. Both references

therefore teach this limitation. Motivation and combination are taken from the rejection to the parent claim.

As to claim 7,

The method as recited in claim 1, wherein identifying a plurality of sets of local extrema comprises determining that each local extremum in the plurality of local extrema is within a specified tolerance of immediately adjacent local extrema.

Piper teaches the use of a tolerance band (e.g. Figure 7), Piper clearly sets forth that since a majority of local extrema (e.g. the "a plurality" recited in the claim) are in the same direction (e.g. points 703, 705, and 707 versus the minority of points 704 and 706), point 705 is chosen as the representative middle point (7:40-56). Motivation and combination are incorporated by reference from the parent rejection.

As to claim 8,

The method as recited in claim 7, wherein determining that each local extremum in a plurality of local extrema is within a specified tolerance of immediately adjacent local extrema comprises determining that each local extremum in a plurality of local extrema is within specified distance tolerance of immediately adjacent local extrema.

As stated in the rejection to claim 7 above, and as substantiated in Piper 7:40-56, local extrema must fall within a tolerance band **of each other** as shown in Figure 7 to constitute an "extrema run" as defined in terms of distance. Clearly, this meets the required definition (e.g. the specification sets forth that 704-706 are extrema run between 703 and 707, although a close look at Figure 7 will show very clearly that all five points **fall within the tolerance band**. Therefore, it is obvious that 704 is within a

tolerance band of 703, and that is what triggered the extrema run classification. The rejection to claim 7 is herein incorporated by reference for motivation and combination. Also, Park teaches the use of control points as required above.

As to claim 10,

The method as recited in claim 1, wherein generating simplified control data that represents an outline of the common edges of the graphical object comprises generating a reduced set of control points, the reduced set of control points representing the features of the outline without representing some variations that would otherwise be included in the outline.

Clearly, Piper teaches that various control points within an extrema run / tolerance band are eliminated as redundant, as set forth above in the rejections to claims 7, 8, and 9 and the like. Clearly, in Figure 7, if elements 704 and 706 are eliminated and only extrema 705 is retained, then these clearly constitute "variations that would otherwise be included in the outline" that are eliminated because the points are not exactly the same as the retained representative (middle) control point. Motivation and combination are taken from the parent rejection.

As to claim 11,

The method as recited in claim 1, wherein generating simplified control data that represents an outline of the common edges of the graphical object comprises generating simplified control data that represents an outline of the common edges a typographical character.

The rejection to claim 3 is incorporated herein by reference. Clearly, as stated therein, the paths recited can be a typographic character. The claim is essentially a duplicate. The rejection to claim 7 is also incorporated by reference, since it teaches eliminating control points and generating a simplified output format (see also the rejection to claim 1).

Claim 4 is rejected under 35 U.S.C. 103(a) as unpatentable over Sander/Piper in view of Park as applied to claim 1 above, and further in view of Scola et al (US 6,714,679 B1) and Foley – as cited in Piper 2:20-25 (copies of the requisite pages are included).

A cubic Bezier spline is known in the art to consist of four control points (see Piper Fig. 1 and 2:10-25. These control points are then used to generate a curved line that consists of, and is representative of, three parametric cubic functions (see for example Foley 11.2, page 479). These cubic functions prima facie are of a higher order than 1, e.g. they have derivatives. Indeed, Foley on page 479 sets forth the parametric tangent vectors of the curves, which are prima facie the derivatives of the equations defining the cubic Bezier spline. Taking the derivative is well known in the art. Scola teaches taking the derivative of the angle of the local tangent along its length as in 4:6-10, and also taking the derivative of curvature to determine the boundary (see 10:53-61), also 12:31-52, which is clearly taught by Foley at the above-cited page, and which provides motivation. Further, since the tangent is by definition the value of the

derivative of a curve at a point (one definition), then using the tangent would be obvious to one of ordinary skill in the art.

Claims 5-6, 12-15, and 17-18 are rejected under 35 U.S.C. 103(a) as unpatentable over Sander/Piper in view of Park as applied to claim 1 above, and further in view of Martinez et al (US 5,319,358)('Martinez').

As to claim 5,

The method as recited in claim 1, wherein identifying a plurality of sets of local extrema comprises determining that a plurality of local extrema are oriented in at least a similar direction.

The relevant sections of the rejection of claim 4 (concerning Foley) are incorporated by reference. Citation of the reference is not required in the instant rejection because a) one of the references cited mentions the specific section of the Foley reference and b) it would be within the skill and knowledge of one or ordinary skill in the art at the time the invention was made to know and use the cubic Bezier splines and knowledge of their operation would thusly be prima facie a matter of obviousness. As stated earlier, it is well known in the art, as established by the Piper reference, to determine the orientation of the lines that are before and after a point (see the rejection to claim 2, which is herein incorporated by reference). Martinez clearly establishes in the abstract that components in similar directions are adjusted so that they will have the same size, and in 9:40-10:30 that similar adjustments are further made. It would have been obvious to one of ordinary skill in the art at the time the invention was made to

combine Sander and Piper with Martinez for the reasons set forth above, and further because Martinez assures ideal scaling in the diagonal direction (Abstract), which would obviously improve the system of Sander and Piper.

As to claim 6, this claim is similar to that of claim 5, the rejection to which is incorporated by reference, except that the plurality of local extrema are oriented in the same direction. This limitation is merely a more specific version of claim 5. That is, it would be obvious that since Piper teaches the use of a tolerance band (e.g. Figure 7), Piper clearly sets forth that since a majority of local extrema (e.g. the "a plurality" recited in the claim) are in the same direction (e.g. points 703, 705, and 707 versus the minority of points 704 and 706), point 705 is chosen as the representative middle point (7:40-56). Clearly, local extrema 703 and 707 fall within the tolerance band and indeed define it, such that they are also part of the extrema run as set forth in the claim even though this is not explicit. It would have been obvious to do so in order to determine the correct position of the extrema point taken as representative of the extrema run for the reasons set forth above (e.g. implementing majority rules functionality in such a scenario would be the easiest to implement from a software perspective (Occam's razor applies here)). Motivation and combination are also incorporated by reference from claim 5. Sander clearly teaches that local extrema are determined by measuring the change in position of local extrema, so that supports the above position.

As to claim 12,

The preamble is ignored, as explained in the rejection to claim 1 above, the rejection to which is incorporated by reference. Clearly, Piper in Figure 7 identifies consecutive

local extrema (703-707), as explained in the rejections above, where a path is clearly an outline. The rejection to claim 5 is incorporated by reference, which explains how the direction of the outline is determined at the points, immediately before and after the selected extrema, and in Sander (7:40-56) and Fig. 7, clearly the extrema are consecutive (e.g. 703-707). The final element of this claim is taught by the rejection to claim 7, wherein Piper has the specified tolerance as set forth, and also the tolerance band is defined around an extrema run, and that is not defined unless a second extrema (e.g. 704) is within the band of a prior one (e.g. 703) or the like. Lastly, the extrema in Piper clearly constitute first and second consecutive local extrema on the path / outline as in Figure 7. The newly added last clause is identical to that in the incorporated rejection to claim 1.

As to claim 13, see the rejection to claims 3 and 11, which are incorporated by reference.

As to claim 14, see the rejection to claim 2, which is incorporated by reference.

As to claim 15, the same logic applies – further, Piper teaches that an extrema run is defined where consecutive extrema fall within the tolerance band, and further than an extrema is defined with respect to the points around, which clearly means that a second local extrema would be determined in the same manner as the first. The rejection to claim 2 is incorporated by reference.

As to claim 17, this is the same limitation as claim 5 above, and the parent rejection and the rejection to claim 5 are herein incorporated by reference.

As to claim 18, this is the same limitation as claim 8, and the parent rejection and the rejection to claim 8 are herein incorporated by reference.

Claim 9 is rejected under 35 U.S.C. 103(a) as unpatentable over Sander/Piper in view of Park as applied to claims 7 and 8 above, the rejections to which are herein incorporated by reference, in view of Lewis et al (US 4,696,707)('Lewis').

As to claim 9,

The method as recited in claim 7, wherein determining that each local extremum in a plurality of local extrema is within a specified tolerance of immediately adjacent local extrema comprises determining that each local extremum in a plurality of local extrema is within specified angle tolerance of immediately adjacent local extrema.

This claim is a duplicate of claim 8 with the slight difference that the tolerance band is defined as an angle tolerance rather than a generic 'specified distance'. The system of Lewis utilizes a tolerance band (like that of Piper) that is based on angle tolerance rather than distance per se (see 13:50-67) in a computer program for determining such things. This proves that the use of angle tolerances is old and well known in the art. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the systems of Piper and Sander with Lewis, because the use of angle tolerances are old and well known in the art, and Piper clearly teaches the use of Bezier curves in column 2, where those curves are known to consist of control points, which generate tangent functions, as is well known in the art (see the cited pages of Foley for proof of that), which are used to determine points of change

based on the derivative – and a local extremum will clearly have a change in direction, as set forth in the previous rejections. Park teaches the use of control points as above.

Claim 15 is rejected under 35 U.S.C. 103(a) as unpatentable over Sander/Piper in view of Park and Martinez as applied to claim 12 above, and further in view of Scola et al (US 6,714,679 B1) and Foley – as cited in Piper 2:20-25 (copies of the requisite pages are included).

A cubic Bezier spline is known in the art to consist of four control points (see Piper Fig. 1 and 2:10-25. These control points are then used to generate a curved line that consists of, and is representative of, three parametric cubic functions (see for example Foley 11.2, page 479). These cubic functions prima facie are of a higher order than 1, e.g. they have derivatives. Indeed, Foley on page 479 sets forth the parametric tangent vectors of the curves, which are prima facie the derivatives of the equations defining the cubic Bezier spline. Taking the derivative is well known in the art. Scola teaches taking the derivative of the angle of the local tangent along its length as in 4:6-10, and also taking the derivative of curvature to determine the boundary (see 10:53-61), also 12:31-52, which is clearly taught by Foley at the above-cited page, and which provides motivation. Further, since the tangent is by definition the value of the derivative of a curve at a point (one definition), then using the tangent would be obvious to one of ordinary skill in the art. Park teaches the use of control points as above.

Claim 18-19 is rejected under 35 U.S.C. 103(a) as unpatentable over Sander/Piper in view of Park and Martinez as applied to claim 12 above, the rejections to which are herein incorporated by reference, in view of Lewis et al (US 4,696,707)('Lewis').

As to claims 18 and 19,

The method as recited in claim 12, wherein determining that the local extremum is within a specified tolerance of the control point off of the outline comprises determining that the local extremum is within a specified angle tolerance of the control point.

This claim is a duplicate of claim 8 with the slight difference that the tolerance band is defined as an angle tolerance rather than a generic 'specified distance'. The system of Lewis utilizes a tolerance band (like that of Piper) that is based on angle tolerance rather than distance per se (see 13:50-67) in a computer program for determining such things. This proves that the use of angle tolerances is old and well known in the art. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the systems of Piper, Martinez, and Sander with Lewis, because the use of angle tolerances are old and well known in the art, and Piper clearly teaches the use of Bezier curves in column 2, where those curves are known to consist of control points, which generate tangent functions, as is well known in the art (see the cited pages of Foley for proof of that), which are used to determine points of change based on the derivative – and a local extremum will clearly have a change in direction, as set forth in the previous rejections. Corona further teaches the use of control points as specified above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Woods whose telephone number is 571-272-7775. The examiner can normally be reached on M-F 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached on 571-272-7782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Eric Woods

August 19, 2006

Ulka Chauhan

ULKA CHAUHAN
SUPERVISORY PATENT EXAMINER